

PATENT  
Atty. Dkt. No. WEAT0314

## REMARKS

This is intended as a full and complete response to the Final Office Action dated October 20, 2005, having a shortened statutory period for response set to expire on January 5, 2006. Please reconsider the claims pending in the application for reasons discussed below.

Claims 13-23 and 32-37 remain pending in the application after entry of this response. Claims 13 and 14 have been amended and claims 24-31 have been canceled without prejudice. No new matter has been added by either the amendments or new claims. Claims 13-23 and 32-37 are rejected and claims 24-31 are subject to restriction and/or election requirement and have been withdrawn from consideration by the Examiner. Reconsideration of the rejected claims is requested for reasons presented below.

Claims 13-15, and 18-23 stand rejected under 35 USC § 103(a) as being unpatentable over *Roeder* (U.S. Pat. No. 5,055,002) in view of *Wilkinson* (U.S. Pat. No. 5,454,696). Applicant respectfully traverses the rejection. *Roeder* and *Wilkinson*, either alone or in combination do not teach, suggest, or disclose either the act of "highly pressurizing and mixing a gas and a liquid to form a first mixture, wherein at least a portion of the gas is dissolved into the liquid," as recited in claim 13 or the act of "injecting a highly pressurized solution comprising a gas dissolved in a liquid into the wellbore," as recited in claim 15.

The Examiner recognizes that *Roeder* does not disclose these acts. The Examiner cites the following passage from *Wilkinson* and contends that it discloses these acts:

In use, relatively high volume, high pressure fluid, either gas, liquid or a mixture thereof, passes through the power fluid inlet 14 into the power fluid inlet conduit 50. The velocity of the power fluid increases substantially and the pressure in the housing adjacent the downstream end of the second plate 54 is thereby lowered substantially.

(col. 2, lines 60-65.) Disclosing that the power fluid may be a mixture of a gas and a liquid is not the same as disclosing a solution for the power fluid. There are other types of mixtures besides solutions. For example, *Wilkinson* could be contemplating a two-phase mixture of the same substance or a two-phase mixture of different substances

PATENT  
Atty. Dkt. No. WEAT0314

which are either insoluble or at an insufficient pressure or at an over-elevated temperature for the gas to dissolve in the liquid.

Further, neither *Roeder* nor *Wilkinson* provides a motivation to combine. The Examiner cites the following passage from *Roeder* as providing a motivation to combine *Roeder* with *Wilkinson*:

The present invention is especially useful in producing a well having a formation that flows a large amount of gas admixed with a liquid. In this instance, the gas is recirculated at 21 and enhances the production rate by acting as a gas lift in addition to the jet action of the pump.

(col. 5, lines 34-36). In this passage, *Roeder* makes no mention of using a solution or even a two-phase mixture as a power fluid. *Roeder* had already disclosed that the power fluid could be a gas and is simply pointing out an advantage of using a gas as a power fluid. This advantage is not new as it is simply how conventional gas lift systems operate. Further, the advantage of the additional lift may be completely outweighed by the loss of efficiency due to using gas as a power fluid. This fact is not even recognized by *Roeder*. Using a solution as a power fluid gains the benefit of the additional gas lift without sacrificing the efficiency of using a liquid as a power fluid.

Further, *Wilkinson* does not provide a motivation to combine with *Roeder*. *Wilkinson* does not even teach, suggest or disclose either putting a jet pump in a wellbore as recited in claim 13 or injecting a solution into a wellbore as recited in claim 15. *Wilkinson* discloses two uses for his jet pumps. *Wilkinson*'s first use is to use gas from a high pressure well as power fluid to pump gas from two low pressure wells (FIG. 1; col. 2, lines 9-25.) However, *Wilkinson* does not specify whether the jet pump is on the surface or in one of the low pressure wells. However, the Figure shows the jet pump on the surface and, from the discussion, it seems more logical that the jet pump is on the surface. Otherwise, *Wilkinson* would have most likely disposed a jet pump in each of the low pressure wells. Further, a jet pump designed for surface use would require extensive modification to be suitable for the adverse conditions present in a wellbore. *Wilkinson*'s second use is to dispose three jet pumps in a desalinization plant (FIG. 6; col. 4, lines 5-67.) This use is unrelated to wellbores.

## PATENT

Atty. Dkt. No. WEAT0314

Therefore, claims 13 and 15 are patentable over *Roeder* in view of *Wilkinson*. Claims 14 and 16-23 are also patentable over *Roeder* in view of *Wilkinson* since they depend from claims 13 and 15, respectively.

Claims 32-35, and 37 stand rejected under 35 USC § 103(a) as being unpatentable over *Roeder* in view of *Wilkinson* and *Cooper* (U.S. Pat. No. 6,457,950). Applicant respectfully traverses the rejection. *Roeder*, *Wilkinson*, and *Cooper*, either alone or in combination do not teach, suggest, or disclose a jet pump coupled to a multiphase pump as recited in claim 32. The Examiner recognizes that neither *Roeder* nor *Wilkinson* discloses a multiphase pump. *Cooper* discloses a subsea, seal-less multiphase pump. *Cooper* does not provide a motivation to combine with *Roeder* and *Wilkinson* because the purpose of *Cooper*'s pump is to directly pump production fluid from a well to the surface (FIG. 1; col. 8, lines 2-10). Thus, *Cooper* has no need for a jet pump. Further, as discussed above, neither *Roeder* nor *Wilkinson* provide a motivation to combine. Therefore, claim 32 is patentable over *Roeder* in view of *Wilkinson* and *Cooper*. Claims 33-35 and 37 are also patentable over *Roeder* in view of *Wilkinson* and *Cooper* since they depend from claim 32.

Regarding claim 34 on its own merit, none of *Roeder*, *Wilkinson*, and *Cooper* teach, suggest, or disclose a gas recycle line, a liquid recycle line, and a computer to control both lines in tandem. This distinction is significant because of the importance of delivering the proper inlet ratio of gas to liquid to the multiphase pump. Careful control of the inlet ratio will extend the service life of the multiphase pump and will markedly improve the efficiency of the jet pump.

Claim 36 stands rejected under 35 USC § 103(a) as being unpatentable over *Roeder* in view of *Wilkinson* and *Cooper* as applied to claim 32 above, and further in view of *Sanderford* (U.S. Pat No. 4,267,885). Applicant respectfully traverses the rejection. *Sanderford* discloses a gas lift system utilizing a temperature sensor to control the optimum amount of gas to be injected. *Sanderford* does nothing to compensate for the lack of disclosure of *Roeder*, *Wilkinson*, and *Cooper* regarding claim 32, as discussed above. Therefore, claim 32 is patentable over *Roeder* in view of *Wilkinson*, *Cooper*, and *Sanderford*. Claim 36 is also patentable over *Roeder* in view of *Wilkinson*, *Cooper*, and *Sanderford* since it depends from claim 32. Regarding claim 36

PATENT

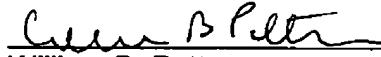
Atty. Dkt. No. WEAT0314

on its own merit, *Sanderford* does not disclose a liquid reservoir. Regarding motivation to combine, *Sanderford* does not mention jet pumps or multiphase pumps.

Regarding claims 16 and 17, the Examiner made no specific rejection of these claims. Therefore, Applicants respectfully request allowance of these claims.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed. Having addressed all issues set out in the Final Office Action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,

  
\_\_\_\_\_  
William B. Patterson  
Registration No. 34,102  
PATTERSON & SHERIDAN, L.L.P.  
3040 Post Oak Blvd. Suite 1500  
Houston, TX 77056  
Telephone: (713) 623-4844  
Facsimile: (713) 623-4846  
Attorney for Applicant(s)

Page 9

409176\_1